

Date: Fri, 14 Jan 94 17:28:32 PST
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
Reply-To: Info-Hams@UCSD.Edu
Precedence: Bulk
Subject: Info-Hams Digest V94 #37
To: Info-Hams

Info-Hams Digest Fri, 14 Jan 94 Volume 94 : Issue 37

Today's Topics:

 Advice for first rig(s)
 FM5CW QSL route?
 Need Repair Info for Monitor
 ORBS\$014.MICRO.AMSAT
 ORBS\$014.MISC.AMSAT
 ORBS\$014.OSCAR.AMSAT
 ORBS\$014.WEATH.AMSAT
 Unix ham radio control program

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 14 Jan 94 17:28:18 GMT
From: ogicse!hp-cv!sdd.hp.com!apollo.hp.com!hpwin052!hpqmoea!
dstock@network.ucsd.edu
Subject: Advice for first rig(s)
To: info-hams@ucsd.edu

Tommy Lee, McDonnell Douglas Space Systems Company - Huntsville
(lee@hvsun1.mdc.COM) wrote:

: I just got my ticket (a tech-plus) at the end of December.

Congratulations, and welcome !

: So if you could bear with me a second, I'll try to summarize what
: I'm looking for and you can see what you think. First of all, I'm
: sure my interests will change and evolve as I start operating.

Quite certain to. At the beginning, you won't know what directions
your interests will take, so your first equipment really should serve to
find this out.

The
: things I *think* I'm interested in now are the result of extensive
: reading over the past 4 or 5 months about the many facets of ham
: radio, rather than actually doing anything :). Anyway, the thought
: of communicating with someone in a far away country was what initially
: drew me to amateur radio (as is the case for many, I'm sure). I own
: a home in a reasonably unrestricted neighborhood, so an antenna won't
: be a problem. So I'm in the market for a good, used HF rig less than
: \$500 if possible.

Starting this way is close to ideal. Buying an older rig, flat on
its price curve allows you to try it in anger, learn from it, and then
sell it for exactly what you paid. Free radio, free education, free
entertainment ! Even if you grow to hate this radio, at least you have
learned what you like/dislike, and as you can recoup your money, you are
free to seek something that suits your newly discovered tastes. I've
just discovered 2 ARRL books I never knew about... 2 volumes of collected
QST reviews. They cover most of the current stuff, and then all the
reasonably common radios back to the sixties.

I'm not sure of prices in your country (They're about HALF ours !)
but you may be able to find a reasonable TS830 which was once a
contester's favourite, the FT902, FT101ZD, FT102 could also be of
interest. These radios all have valve (tube) outputs which could need
replacing at modest cost, the benefit of them is that their Pi-tanks act
as a medium-range built in ATU, with about the same coverage as many of
the flashy auto atus in the \$\$\$\$\$ radios. The RX input stage on the
FT102 is notoriously easy to blow up, but is easy to fix.

If you can find a TEN-TEC Corsair in your price range, you would
have a very respectable transceiver indeed. They have a reputation of
so-so reliability, but are easy to fix and the manufacturers are
extremely friendly and helpful. Several friends use these, and I've
fixed them when needed, I'd say there was no reliability problem, but
they could benefit from a bit of careful filtering of ancillary
connections. Amateur bands only, a delightfully clean Rx allowing you to
work things other people can't hear.

I'd like a general coverage receiver, too, but
: I don't know when they became common on HF transceivers. A good
: rig in that price range might be too old to have a general coverage
: receiver. Any suggestions on specific models I should keep my eyes
: open for?

The first rigs including general coverage were very poor, well worth avoiding. I have a soft spot for FT102's and TS830's but I wouldn't touch an FT757 or a TS 430 with the proverbial barge-pole. The first general coverage job worth bothering with was probably the IC735, which has earned a reputation as a good radio, with the inevitable high resale prices.

I've been told that the Collins S-Line is good, as well
: as the KWM-2A. Drake was also mentioned (TR4-C and TR-7). Of
: course, I don't know anything about any of these radios, yet, so
: I don't know what would make one better than another.

These were superb radios in their day, but beware that they are not quite as good as the legends have it. Reminiscences tend to be a little golden-tinged ! S-line and KWM2's are now rather old, and any ones now for sale will likely need maintenance and regular service work. With someone local that can help, this can be educational. Second hand prices are higher than is appropriate to their true value because of the legends. It's a little like choosing a Bugatti type 35 racer as your first car - it will cost in money and time, but prove educational, and get you involved with a fairly good bunch of enthusiasts. Parts are getting rare and are becoming expensive as these acquire collectors item status.

: Also, I've got a 386 at home that I'd like to set up as part of a
: packet station. I've considered a dual-band HT for this purpose, which would
: have the side benefit of giving me a radio I could take backpacking
: and camping, as well as on the road. My gut feeling, however, is that
: an HT would be a compromise for a packet station as well as a mobile -- but
: that's just a guess.

A good guess, your guts are right! You won't use many frequencies for packet, and the true value of packet is in leaving it running, rather than trying to use it for real time QSOs... this means a separate radio. You will wind up, most likely, with several radios and the packet one can be the cheapest. This is an ideal application for a re-crystalled commercial rig, something by GE or Motorola bought cheaply

at a rally. You'll need a little help to modify it, then it's your turn to help others.

It would be great for hiking, though. And it would
: get me on the air quickly. But that got me thinking about mobiles. Would
: I be better off buying a mobile instead. Obviously, it wouldn't be very
: convenient for backpacking -- my truck won't fit in my pack :). But I do
: spend more time on the road and at home than I do in the woods, so I want
: to try to get a rig that will give me the best value for my current
: interests. I can always buy another radio later assuming I don't get
: laid off :). Anyway, based on the catalog prices that I've seen, a dual-band
: mobile doesn't cost a whole lot more than the fancy dual-band handhelds such as
: the Yaesu FT-530. Besides, if I used an HT in the car very much, I'd end up
: buying an external speaker/mic. This would further reduce the price difference.
: I'd be interested to hear from some of you that have used an HT for packet and
: commuting and how well it's worked for you. Also, if you have both types, maybe
: you could give me some pros/cons of both types of radios for the purposes I've
: mentioned. Also, I remember a posting a few weeks back where someone compiled
: some suggestions for buying an HT. It seems like someone said that they
: wouldn't recommend buying an HT as a first radio. I'd be interested to hear
: some of the reasons for this.

You have used three key words "Handheld" "dual-band" and "catalogue price". The market demands have steered the manufacturers towards smaller and smaller portables, with wide coverage as a sort of built in scanner, with longer operating times from smaller batteries. The current products all have sacrificed RF performance to achieve these ends, they have wide front end filters, power-starved RF amplifiers and mixers, and have RF performance and coverage comparable to a cheap and nasty scanner. This means that they are much more susceptible to overload from nearby out-of-amateur-band transmissions than older models. If you want a hand-held, I'd recommend looking at re-programmed commercial (Motorola, GE, etc etc) units, or old model Japanese stuff like the IC02E. Surprisingly few people are aware that modern units are prone to blocking and overload, firstly, what they don't hear, they often don't know they're missing, and when they know they're failing to receive something, they don't realise that some other radios would still be working. Don't buy an HT as a first radio, you need to learn and form your own opinions first, finding a good one is a minefield. They are designed to impress the non-technical. I'm not surprised that some now include computer games (a cynic like me would add "in place of RF selectivity").

There are plenty of reasonable quality mobiles out there, go for something second hand and old-ish, and treat it as a learning exercise. I use a FT480 multimode at home, and a TW 4000A dual band FM rig in the land-rover, I've had both for several years, both were bought second

hand, and I feel no urge to change either. I don't have an HT, If I had a need for one immediately, I'd be in trouble, I don't know of one on sale here that I'd consider satisfactory. Reports of a radio shack HT in the US, with proper 2m band selectivity are encouraging.

: Lastly, satellites seem very interesting, but I'm sure that is a ways down the road for me. Also, I don't know if the HT/mobile could be used there too. Is FM appropriate for working satellites? Either way, I don't think this part should affect any of my purchase plans just yet. But I would like to hear from someone with experience in this area concerning the gear they use (or wish they had) and maybe the title of a good introductory book.

The keen satellite folk around here have all saved up for FT736's, but you can get on with a few old radios. You don't need modern multi-banders, one radio on each of the two necessary bands will do fine. The very very serious VHF folk still use transverters into good HF rigs.

: My budget is not without limit, so I know I can't get all of this stuff at once. It sort of depends on what I find first. I'm leaning toward the VHF gear because I could get on the air quicker. Also, I could set up a packet station fairly soon after that and really start to get my feet wet.

May I suggest an HF rig first, which will use up your budget nicely, and then shop around for a junk commercial mobile unit to be modified for a couple of chosen packet frequencies. On this net and on HF you can seek a few people prepared to give advice and possibly physical help.

You can use your HF radio with a converter to listen to sat output, and so only need a rig for the satellite input band.

The less you spend, the more you learn, which gives you a profound advantage.

Unfortunately, there are
: not
: too many hamfests near me (Huntsville, AL), so it might take awhile to find
: an HF rig. There are some larger cities within driving distance (Nashville is
: only two hours away, Birmingham is less than that, and I can be in Atlanta in
: about 4 hours). I'll just try to keep my eyes and ears open, and hopefully
: if/when I run across the right radio, I'll have the budget available to get it.
: But the other gear I could easily order and be on the air fairly soon.

: I'm afraid I've rambled on much more than I had anticipated. My basic
: questions,
: in case you got tired of reading and missed them :), were this:

: 1) can you recommend any used HF rigs (less than \$500) that I should look for?

: 2) i like (even prefer) the potential convenience of a handheld radio, but
: would

: it be a poor choice for packet and auto use?

yes it would

: Thanks for any help.

: Tommy Lee

: KE4IME (took the tests Nov 6, in my mailbox Dec 28)

: lee@hvsun40.mdc.com

My answers have been a bit long-winded, and maybe a little opinionated, but I hope I've covered all your questions. These are just personal opinions, formed by acting as the local rig-fixer for a number of years, I hope they help a little.

Good luck

David GM4ZNX (in the land on the map coloured tartan)

Date: 13 Jan 94 01:57:19 GMT
From: psinntp!gdstech!gdstech!bat@uunet.uu.net
Subject: FM5CW QSL route?
To: info-hams@ucsd.edu

We have a 1991 listing for FM5CW that says to send via the bureau.

--

* Pat Masterson D12-25 | KE2LJ@KC2FD *
* Grumman Data Systems | 516-346-6316. *
* Bethpage, NY 11746 | bat@gdstech.grumman.com *

Date: 14 Jan 94 16:57:00 GMT
From: hp-cv!hp-pcd!hpcvra!steveh@hplabs.hp.com

Subject: Need Repair Info for Monitor
To: info-hams@ucsd.edu

A few years ago, I bought a new Commodore C-64 for the kids, hoping they would play a few games and get interested in computers... What happened was, they got interested in computer games... Anyway, a couple of years went by, and the nice little Samsung composite color monitor that we bought with the system just up and died. Being an EE myself and having lots of test equipment at work, I could easily fix most little problems that crop up in such devices, IF I only had a schematic and maybe a little block diagram and some repair info. The kids aren't too interested anymore, and I might set up a dedicated packet station or something if I could get it fixed...

So, the question for the netters is: Where does one obtain this sort of information for this sort of equipment? I have heard that Sams Co. provides such stuff. Does any one know a phone and address for them? Do they provide a catalog or something? My suspicion is that the manufacturer would want to give you a thick manual that costs its weight in platinum and only covers one model (and probably hasn't been translated from Japanese), if you can even find the right contact in the company. I really would hate to throw this thing in the junk pile (I have more than enough CRT bombs lying around already). Thanks for any help!

-Steve KF7WY

Date: 14 Jan 94 13:39:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: ORBS\$014.MICRO.AMSAT
To: info-hams@ucsd.edu

SB KEPS @ AMSAT \$ORBS-014.D
Orbital Elements 014.MICROS

HR AMSAT ORBITAL ELEMENTS FOR THE MICROSATS
FROM WA5QGD FORT WORTH,TX January 14, 1994
BID: \$ORBS-014.D
TO ALL RADIO AMATEURS BT

Satellite: UO-14
Catalog number: 20437
Epoch time: 94010.77417742

Element set: 955
Inclination: 98.6020 deg
RA of node: 97.6365 deg
Eccentricity: 0.0010436
Arg of perigee: 297.1869 deg
Mean anomaly: 62.8248 deg
Mean motion: 14.29816216 rev/day
Decay rate: 9.1e-07 rev/day^2
Epoch rev: 20709
Checksum: 319

Satellite: A0-16

Catalog number: 20439
Epoch time: 94010.27599894
Element set: 756
Inclination: 98.6100 deg
RA of node: 98.2182 deg
Eccentricity: 0.0010807
Arg of perigee: 299.7021 deg
Mean anomaly: 60.3085 deg
Mean motion: 14.29872172 rev/day
Decay rate: 9.0e-07 rev/day^2
Epoch rev: 20703
Checksum: 307

Satellite: D0-17

Catalog number: 20440
Epoch time: 94010.24566329
Element set: 755
Inclination: 98.6104 deg
RA of node: 98.4590 deg
Eccentricity: 0.0010937
Arg of perigee: 298.8420 deg
Mean anomaly: 61.1664 deg
Mean motion: 14.30010001 rev/day
Decay rate: 8.5e-07 rev/day^2
Epoch rev: 20704
Checksum: 273

Satellite: W0-18

Catalog number: 20441
Epoch time: 94010.77802339
Element set: 756
Inclination: 98.6102 deg
RA of node: 98.9976 deg
Eccentricity: 0.0011564
Arg of perigee: 297.9734 deg
Mean anomaly: 62.0277 deg

Mean motion: 14.29986901 rev/day
Decay rate: 7.6e-07 rev/day^2
Epoch rev: 20712
Checksum: 332

Satellite: L0-19

Catalog number: 20442
Epoch time: 94010.27687465
Element set: 755
Inclination: 98.6110 deg
RA of node: 98.7224 deg
Eccentricity: 0.0011738
Arg of perigee: 298.7184 deg
Mean anomaly: 61.2818 deg
Mean motion: 14.30080180 rev/day
Decay rate: 9.0e-07 rev/day^2
Epoch rev: 20706
Checksum: 300

Satellite: U0-22

Catalog number: 21575
Epoch time: 94010.20521252
Element set: 456
Inclination: 98.4527 deg
RA of node: 87.7827 deg
Eccentricity: 0.0008506
Arg of perigee: 45.5057 deg
Mean anomaly: 314.6824 deg
Mean motion: 14.36880739 rev/day
Decay rate: 8.6e-07 rev/day^2
Epoch rev: 13039
Checksum: 309

Satellite: K0-23

Catalog number: 22077
Epoch time: 94010.71614680
Element set: 351
Inclination: 66.0891 deg
RA of node: 249.6865 deg
Eccentricity: 0.0008292
Arg of perigee: 327.4530 deg
Mean anomaly: 32.5976 deg
Mean motion: 12.86283043 rev/day
Decay rate: -3.7e-07 rev/day^2
Epoch rev: 6653
Checksum: 305

Satellite: I0-26

Catalog number: 22826
Epoch time: 94010.74365142
Element set: 254
Inclination: 98.6708 deg
RA of node: 88.0424 deg
Eccentricity: 0.0008909
Arg of perigee: 315.3567 deg
Mean anomaly: 44.6895 deg
Mean motion: 14.27703185 rev/day
Decay rate: 6.4e-07 rev/day^2
Epoch rev: 1522
Checksum: 310

Satellite: A0-27
Catalog number: 22825
Epoch time: 94010.75128956
Element set: 253
Inclination: 98.6699 deg
RA of node: 88.0360 deg
Eccentricity: 0.0008369
Arg of perigee: 315.3218 deg
Mean anomaly: 44.7287 deg
Mean motion: 14.27601262 rev/day
Decay rate: 9.1e-07 rev/day^2
Epoch rev: 1522
Checksum: 310

Satellite: K0-25
Catalog number: 22830
Epoch time: 94010.22919834
Element set: 255
Inclination: 98.5723 deg
RA of node: 86.4575 deg
Eccentricity: 0.0010974
Arg of perigee: 282.5588 deg
Mean anomaly: 77.4365 deg
Mean motion: 14.28026996 rev/day
Decay rate: 3.3e-07 rev/day^2
Epoch rev: 1515
Checksum: 322

/EX

Date: 14 Jan 94 13:44:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: ORBS\$014.MISC.AMSAT

To: info-hams@ucsd.edu

SB KEPS @ AMSAT \$ORBS-014.M
Orbital Elements 014.MISC

HR AMSAT ORBITAL ELEMENTS FOR MANNED AND MISCELLANEOUS SATELLITES
FROM WA5QGD FORT WORTH, TX January 14, 1994
BID: \$ORBS-014.M
TO ALL RADIO AMATEURS BT

Satellite: MIR
Catalog number: 16609
Epoch time: 94013.23246154
Element set: 93
Inclination: 51.6178 deg
RA of node: 244.1498 deg
Eccentricity: 0.0005389
Arg of perigee: 191.8997 deg
Mean anomaly: 168.1855 deg
Mean motion: 15.59710416 rev/day
Decay rate: 7.501e-05 rev/day^2
Epoch rev: 45187
Checksum: 326

Satellite: HUBBLE
Catalog number: 20580
Epoch time: 94012.60564155
Element set: 427
Inclination: 28.4679 deg
RA of node: 155.2431 deg
Eccentricity: 0.0006043
Arg of perigee: 261.7035 deg
Mean anomaly: 98.2865 deg
Mean motion: 14.90421224 rev/day
Decay rate: 8.41e-06 rev/day^2
Epoch rev: 615
Checksum: 271

Satellite: GRO
Catalog number: 21225
Epoch time: 94011.88639997
Element set: 54
Inclination: 28.4618 deg
RA of node: 236.3958 deg
Eccentricity: 0.0003410
Arg of perigee: 244.2475 deg
Mean anomaly: 115.7767 deg
Mean motion: 15.39803980 rev/day

Decay rate: 4.606e-05 rev/day^2
Epoch rev: 3281
Checksum: 314

Satellite: UARS

Catalog number: 21701
Epoch time: 94011.32398713
Element set: 462
Inclination: 56.9840 deg
RA of node: 67.6091 deg
Eccentricity: 0.0005313
Arg of perigee: 102.6819 deg
Mean anomaly: 257.3568 deg
Mean motion: 14.96361954 rev/day
Decay rate: -3.119e-05 rev/day^2
Epoch rev: 12745
Checksum: 300

Satellite: POSAT

Catalog number: 22829
Epoch time: 94010.23145061
Element set: 246
Inclination: 98.6671 deg
RA of node: 87.5394 deg
Eccentricity: 0.0009751
Arg of perigee: 303.3262 deg
Mean anomaly: 56.6985 deg
Mean motion: 14.27996332 rev/day
Decay rate: 9.0e-07 rev/day^2
Epoch rev: 1515
Checksum: 301

/EX

Date: 14 Jan 94 13:36:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: ORBS\$014.OSCAR.AMSAT
To: info-hams@ucsd.edu

SB KEPS @ AMSAT \$ORBS-014.0
Orbital Elements 014.OSCAR

HR AMSAT ORBITAL ELEMENTS FOR OSCAR SATELLITES
FROM WA5QGD FORT WORTH,TX January 14, 1994
BID: \$ORBS-014.0
TO ALL RADIO AMATEURS BT

Satellite: A0-10

Catalog number: 14129

Epoch time: 94012.88782746

Element set: 252

Inclination: 27.1999 deg

RA of node: 346.8463 deg

Eccentricity: 0.6020165

Arg of perigee: 145.8302 deg

Mean anomaly: 274.3239 deg

Mean motion: 2.05879874 rev/day

Decay rate: $-3.37\text{e-}06$ rev/day²

Epoch rev: 7958

Checksum: 340

Satellite: U0-11

Catalog number: 14781

Epoch time: 94010.08597013

Element set: 656

Inclination: 97.7948 deg

RA of node: 32.1580 deg

Eccentricity: 0.0013012

Arg of perigee: 56.2907 deg

Mean anomaly: 303.9538 deg

Mean motion: 14.69119704 rev/day

Decay rate: $3.80\text{e-}06$ rev/day²

Epoch rev: 52709

Checksum: 303

Satellite: RS-10/11

Catalog number: 18129

Epoch time: 94012.18938195

Element set: 853

Inclination: 82.9265 deg

RA of node: 84.1595 deg

Eccentricity: 0.0012815

Arg of perigee: 92.4751 deg

Mean anomaly: 267.7871 deg

Mean motion: 13.72329421 rev/day

Decay rate: $4.3\text{e-}07$ rev/day²

Epoch rev: 32851

Checksum: 318

Satellite: A0-13

Catalog number: 19216

Epoch time: 94012.80728378

Element set: 864

Inclination: 57.8771 deg

RA of node: 273.8452 deg
Eccentricity: 0.7205596
Arg of perigee: 332.6950 deg
Mean anomaly: 3.3813 deg
Mean motion: 2.09726405 rev/day
Decay rate: -4.96e-06 rev/day^2
Epoch rev: 4275
Checksum: 329

Satellite: F0-20

Catalog number: 20480
Epoch time: 94010.95413140
Element set: 651
Inclination: 99.0159 deg
RA of node: 192.6118 deg
Eccentricity: 0.0541004
Arg of perigee: 335.8403 deg
Mean anomaly: 21.8259 deg
Mean motion: 12.83223133 rev/day
Decay rate: -3.4e-07 rev/day^2
Epoch rev: 18396
Checksum: 271

Satellite: A0-21

Catalog number: 21087
Epoch time: 94012.62069919
Element set: 415
Inclination: 82.9431 deg
RA of node: 257.8282 deg
Eccentricity: 0.0035513
Arg of perigee: 155.4415 deg
Mean anomaly: 204.8441 deg
Mean motion: 13.74531504 rev/day
Decay rate: 9.4e-07 rev/day^2
Epoch rev: 14821
Checksum: 288

Satellite: RS-12/13

Catalog number: 21089
Epoch time: 94003.81201797
Element set: 644
Inclination: 82.9224 deg
RA of node: 133.3515 deg
Eccentricity: 0.0028470
Arg of perigee: 204.2513 deg
Mean anomaly: 155.7306 deg
Mean motion: 13.74032105 rev/day
Decay rate: 1.3e-07 rev/day^2

Epoch rev: 14607
Checksum: 264

/EX

Date: 14 Jan 94 13:42:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: ORBS\$014.WEATH.AMSAT
To: info-hams@ucsd.edu

SB KEPS @ AMSAT \$ORBS-014.W
Orbital Elements 014.WEATHER

HR AMSAT ORBITAL ELEMENTS FOR WEATHER SATELLITES
FROM WA5QGD FORT WORTH, TX January 14, 1994
BID: \$ORBS-014.W
TO ALL RADIO AMATEURS BT

Satellite: NOAA-9
Catalog number: 15427
Epoch time: 94012.02966378
Element set: 675
Inclination: 99.0745 deg
RA of node: 60.5237 deg
Eccentricity: 0.0014518
Arg of perigee: 302.8342 deg
Mean anomaly: 57.1432 deg
Mean motion: 14.13578753 rev/day
Decay rate: 1.11e-06 rev/day^2
Epoch rev: 46828
Checksum: 308

Satellite: NOAA-10
Catalog number: 16969
Epoch time: 94012.05489049
Element set: 574
Inclination: 98.5117 deg
RA of node: 25.8091 deg
Eccentricity: 0.0014292
Arg of perigee: 65.7755 deg
Mean anomaly: 294.4914 deg
Mean motion: 14.24856833 rev/day
Decay rate: 8.8e-07 rev/day^2
Epoch rev: 38037
Checksum: 337

Satellite: MET-2/17
Catalog number: 18820
Epoch time: 94010.49966547
Element set: 253
Inclination: 82.5404 deg
RA of node: 34.0252 deg
Eccentricity: 0.0015326
Arg of perigee: 265.7718 deg
Mean anomaly: 94.1693 deg
Mean motion: 13.84704489 rev/day
Decay rate: 5.6e-07 rev/day^2
Epoch rev: 30053
Checksum: 308

Satellite: MET-3/2
Catalog number: 19336
Epoch time: 94010.21677031
Element set: 255
Inclination: 82.5411 deg
RA of node: 75.4737 deg
Eccentricity: 0.0015967
Arg of perigee: 300.1181 deg
Mean anomaly: 59.8358 deg
Mean motion: 13.16963401 rev/day
Decay rate: 5.1e-07 rev/day^2
Epoch rev: 26246
Checksum: 285

Satellite: NOAA-11
Catalog number: 19531
Epoch time: 94011.93062008
Element set: 476
Inclination: 99.1569 deg
RA of node: 357.1352 deg
Eccentricity: 0.0011172
Arg of perigee: 210.6074 deg
Mean anomaly: 149.4447 deg
Mean motion: 14.12949121 rev/day
Decay rate: 1.38e-06 rev/day^2
Epoch rev: 27315
Checksum: 285

Satellite: MET-2/18
Catalog number: 19851
Epoch time: 94010.22638494
Element set: 254
Inclination: 82.5234 deg
RA of node: 269.8530 deg

Eccentricity: 0.0013932
Arg of perigee: 316.1413 deg
Mean anomaly: 43.8640 deg
Mean motion: 13.84355084 rev/day
Decay rate: 1.14e-06 rev/day^2
Epoch rev: 24583
Checksum: 296

Satellite: MET-3/3
Catalog number: 20305
Epoch time: 94012.21817743
Element set: 969
Inclination: 82.5469 deg
RA of node: 17.8121 deg
Eccentricity: 0.0006413
Arg of perigee: 326.0438 deg
Mean anomaly: 34.0268 deg
Mean motion: 13.04399384 rev/day
Decay rate: 4.4e-07 rev/day^2
Epoch rev: 20256
Checksum: 284

Satellite: MET-2/19
Catalog number: 20670
Epoch time: 94010.36092796
Element set: 755
Inclination: 82.5461 deg
RA of node: 333.8268 deg
Eccentricity: 0.0014612
Arg of perigee: 227.3560 deg
Mean anomaly: 132.6370 deg
Mean motion: 13.84186139 rev/day
Decay rate: 2.4e-07 rev/day^2
Epoch rev: 17878
Checksum: 312

Satellite: FY-1/2
Catalog number: 20788
Epoch time: 94003.03844225
Element set: 862
Inclination: 98.8453 deg
RA of node: 28.3934 deg
Eccentricity: 0.0015034
Arg of perigee: 108.6050 deg
Mean anomaly: 249.2585 deg
Mean motion: 14.01339724 rev/day
Decay rate: -2.7e-07 rev/day^2
Epoch rev: 17057

Checksum: 297

Satellite: MET-2/20
Catalog number: 20826
Epoch time: 94010.22431973
Element set: 754
Inclination: 82.5269 deg
RA of node: 271.6566 deg
Eccentricity: 0.0013720
Arg of perigee: 125.9243 deg
Mean anomaly: 234.3192 deg
Mean motion: 13.83570021 rev/day
Decay rate: $8.7e-07$ rev/day²
Epoch rev: 16591
Checksum: 289

Satellite: MET-3/4
Catalog number: 21232
Epoch time: 94010.23936452
Element set: 662
Inclination: 82.5496 deg
RA of node: 281.2627 deg
Eccentricity: 0.0011829
Arg of perigee: 219.1707 deg
Mean anomaly: 140.8560 deg
Mean motion: 13.16459166 rev/day
Decay rate: $5.0e-07$ rev/day²
Epoch rev: 13057
Checksum: 287

Satellite: NOAA-12
Catalog number: 21263
Epoch time: 94010.55261609
Element set: 834
Inclination: 98.6367 deg
RA of node: 41.6836 deg
Eccentricity: 0.0012890
Arg of perigee: 338.0944 deg
Mean anomaly: 21.9680 deg
Mean motion: 14.22355318 rev/day
Decay rate: $1.78e-06$ rev/day²
Epoch rev: 13812
Checksum: 299

Satellite: MET-3/5
Catalog number: 21655
Epoch time: 94010.09455474
Element set: 658

Inclination: 82.5580 deg
RA of node: 228.3870 deg
Eccentricity: 0.0012144
Arg of perigee: 230.2532 deg
Mean anomaly: 129.7521 deg
Mean motion: 13.16826852 rev/day
Decay rate: 5.1e-07 rev/day^2
Epoch rev: 11565
Checksum: 289

Satellite: MET-2/21
Catalog number: 22782
Epoch time: 94010.28911561
Element set: 254
Inclination: 82.5489 deg
RA of node: 331.5590 deg
Eccentricity: 0.0021925
Arg of perigee: 312.2133 deg
Mean anomaly: 47.7166 deg
Mean motion: 13.82996559 rev/day
Decay rate: 6.0e-07 rev/day^2
Epoch rev: 1826
Checksum: 302

/EX

Date: 13 Jan 1994 18:39:16 GMT
From: usc!howland.reston.ans.net!vixen.cso.uiuc.edu!sdd.hp.com!hpscit.sc.hp.com!
icon.rose.hp.com!hpchase.rose.hp.com!cmoore@network.ucsd.edu
Subject: Unix ham radio control program
To: info-hams@ucsd.edu

As an offshoot of my project of writing an X11 logging program, I've decided I'd like to tackle writing a generic radio control program for Unix-like systems. My idea is something like this:

- A server process could be configured with information about what kind(s) of radio(s) you have, what serial ports to use, etc.
- The server would accept connections from other processes that want to interface with the radio.
- The server would communicate with the processes using some kind of generic radio control protocol.

This way other programs can talk to a radio without having to know anything about the details of communicating with it. They just talk to the server in a generic language and the server handles the radio interactions. This brings up a few questions, and I'd like to solicit input and

opinions from the net before I dig into this:

- What kind of functions need to be defined in the generic language?
A few things that come to mind are things like 'get frequency', 'set frequency', 'get mode', 'set mode'. What other things might a program want a radio to do (assuming of course that the radio supports it.)
- Are there other things besides radios that might be controlled?
Antenna rotators? Antenna switches?
- At some point I'll need details for the various known controllable things, like the command language for Icom, Yaesu, Kenwood, etc.
Maybe people on the net can help provide these things for me.

After getting lots of response to my earlier posting about the X11 logging program I'm beginning to think there are lots of people running unix-like systems (mostly Linux) in their ham shacks. I'm hoping that I can come up with something that will serve the needs of a variety of interface requirements so that people can start linking up their unix boxes with their radios.

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End of Info-Hams Digest V94 #37

